the master mask is transferred to produce the first mask and a condition under which the parent pattern of the master mask is transferred to produce the second mask are different from each other.--

--15. A producing method of a mask as recited in claim 14, wherein a parent pattern of a second master mask different from the master mask is transferred onto the first substrate to form a phase-shift portion in the first mask.--

--16. A producing method of a mask as recited in claim 15, wherein he first mask is a mask for enhancing resolution, and the second mask is a mask for defining a shape.--

--17. A producing method of a mask as recited in claim 14, wherein an optical exposure apparatus which reduces and projects the parent pattern of the master mask is used when the first and second masks are produced.--

--18. A producing method of a mask used for double exposure of a photosensitive substrate, wherein a master mask used when a first mask is produced using one exposure of the double exposure is used when a second mask used for the other exposure of the double exposure is produced, and a condition under which a parent pattern of the master mask is transferred for the second mask is different from a condition for the first mask.--

REMARKS

Claims 1-18 are pending. By this Preliminary Amendment, the specification and claims 1-13 are amended and material in the specification and claims 14-18 are added. This Preliminary Amendment enters the material from the Annexes to the IPER of the PCT application. This Preliminary Amendment also duplicates the changes requested in the June 25, 2001 and July 12, 2001 Preliminary Amendments. Prompt and favorable consideration on the merits is respectfully requested.

The attached Appendix includes marked-up copies of each rewritten paragraph (37 C.F.R. §1.121(b)(1)(iii)) and claim (37 C.F.R. §1.121(c)(1)(ii)).

Respectfully submitted,

James A. Oliff
Registration No. 27,075

Joel S. Armstrong
Registration No. 36,430

JAO:JSA/zmc

Attached: APPENDIX

Date: August 28, 2001

OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

DEPOSIT ACCOUNT USE AUTHORIZATION
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APPENDIX

Changes to Specification:

Page 1, between lines 2 and 3, a new paragraph is added.

Page 11, between lines 2 and 3, a new paragraphs are added.

Page 5, line 16 to page 6, line 6:

A first producing method of a mask of the present invention is a producing method of a mask for producing a phase-shift mask ~~(WR1)~~ and a correction exposure mask ~~(WR2)~~ used when a transmission image of a pattern of the phase-shift mask is corrected by superposing exposure, wherein a parent pattern ~~(PA1 to PC1)~~ is formed on a first substrate to form a master mask ~~(MR)~~, the parent pattern of the master mask is transferred onto a second substrate under a first condition, and a predetermined phase shift portion ~~(SA to SD)~~ is formed on the second substrate, thereby forming the phase-shift mask ~~(WR1)~~, and the parent pattern of the master mask is transferred onto a third substrate under a second condition which is different from the first condition, thereby forming the correction exposure mask ~~(WR2)~~.

Page 8, line 10 to line 22:

Next, a second producing method of a mask of the present invention is a producing method of a mask for producing a correction exposure mask ~~(WR2)~~ used when a transfer image of a pattern of a predetermined phase-shift mask is corrected by superimposing exposure, wherein a parent pattern is formed on a first substrate ~~(R)~~ to produce a master mask ~~(MR)~~, the parent pattern of the master mask is transferred onto a second substrate ~~(R2)~~ under a condition (e.g., condition of a lower resolution) different from a condition under which a light shield pattern of the phase-shift mask is formed, thereby forming the correction exposure mask. With this mask producing method, it is possible to produce the correction exposure mask within a short time and at low cost.

Page 9, line 1 to line 17:

Next, a producing apparatus of a mask of the present invention is a producing apparatus of a mask for producing a plurality kinds of masks different from one another, comprising a mask stage ~~(13)~~ which holds a master mask ~~(MR)~~ on which a parent pattern is formed, a substrate stage ~~(8, 9)~~ which sequentially holds and positions a plurality of mask substrates ~~(R1, R2)~~ for the masks, illumination optical systems ~~(1 to 5)~~ which illuminates the master masks on the mask stage, a projection optical system ~~(PL)~~ which transfers an image of the parent pattern of the master mask onto the mask substrate on the substrate stage, and a control system ~~(16)~~ which adjusts at least one of an exposure amount with respect to the mask substrate and a resolution of the projection optical system in accordance with kinds of the mask to be produced. According to this mask producing apparatus of the present invention, it is possible to carry out the mask producing methods of the present invention.

Page 9, line 18 to page 10, line 10:

Next, a first producing method of a device of the present invention is a method for producing a predetermined device, comprising: a first step of drawing a parent pattern corresponding to a pattern of a predetermined layer of the device onto one or a plurality of first substrates to form a master mask ~~(MRi, Mpi)~~,

a second step of transferring the parent pattern of the master mask onto a second substrate under a first condition and forming a predetermined phase-shift portion on the second substrate, thereby forming a phase-shift mask ~~(WR1)~~, a third step of transferring the parent pattern of the master mask onto a third substrate under a second condition which is different from the first condition, thereby forming a correction exposure mask ~~(WR2)~~, and a fourth step of exposing in a superimposing manner the pattern of the phase-shift mask and the pattern of the correction exposure mask on a fourth substrate ~~(W)~~.

Page 11, line 4 to line 19:

Fig.~~1(A)~~ 1A is a plan view showing a master reticle MR used in one example of a preferred embodiment of the present invention, Fig.~~1(B)~~ 1B is a plan view showing a substrate R1 on which light shield patterns PA2, PB2 are formed, Fig.~~1(C)~~ 1C is a plan view showing a phase-shift reticle WR1, and Fig.~~1(D)~~ 1D is a plan view showing a correction exposure reticle WR2. ~~Fig.2 is a view~~ Figs.2A-2D are views for explaining an exposure condition when the phase-shift reticle WR1 and the correction exposure reticle WR2 are produced. Fig.3 is a schematic constitutional view showing an optical projection exposure apparatus for producing a reticle used in the one example of the preferred embodiment of the present invention. Fig.4 is an explanatory view of steps of producing a set of master reticles from a predetermined circuit pattern in the preferred embociment. Fig.5 is an explanatory view of steps of producing a semiconductor device using the set of master reticles.

Page 12, line 4 to line 24:

Fig.~~1(A)~~ 1A shows a master reticle MR used for producing the phase-shift reticle and the correction exposure reticle of the present example using an optical projection exposure apparatus. In Fig.~~1(A)~~ 1A, the master reticle MR is formed with a parent pattern PA1 of a dense pattern comprising light shield patterns P1 to P3, and T-shaped parent patterns PB1 and PC1 comprising isolated light shield patterns. These parent patterns PA1 to PC1 are obtained by enlarging, in a similarity manner, circuit patterns of a certain layer of a semiconductor device which is to be finally produced. Each the parent pattern has a size of $\alpha \cdot \beta$ times enlarged circuit pattern of the semiconductor device to be finally produced if a reduction magnification of a projection exposure apparatus for producing a semiconductor device is defined as $1/\beta$ ($1/\beta$ is 1/4, 1/5 or the like for example) and a reduction magnification of a projection exposure apparatus for producing a reticle is defined as $1/\alpha$ ($1/\alpha$ is 1/4, 1/5 or the like for example). Alignment marks 22A and 22B comprising two two-dimensional marks

are formed on the master reticle MR with a predetermined positional relation with respect to the parent patterns PA1 to PC1.

Page 13, line 1 to line 7:

Although the parent patterns PA1 to PC1 are illustrated in Figs.~~1~~ 1A-1D and ~~2~~ 2A-2D with thick line width for the sake of convenience, the actual pattern has a line width of on the order of μm. Patterns in Figs.~~1(B)~~ 1B to ~~(D)~~ 1D are, for example, reversed and reduced with respect to the pattern shown in Fig.~~1(A)~~ 1A, but these patterns are illustrated in a normal state with equal magnification for the sake of convenience.

Page 14, line 17 to page 15, line 8:

Fig.~~1(B)~~ 1B shows a light transmission substrate R1 made of silica glass, silica glass doped with fluorine, or fluorite. In Fig.~~1(B)~~ 1B, light shield patterns PA2 to PC2 on the substrate R1 are formed by transferring the parent patterns PA1 to PC1 of the master reticle MR with reduced magnification of $1/\alpha$. The substrate R1 made of magnesium fluoride, predetermined quartz crystal or the like may also be used. The light shield patterns PA2, PB2, PC2 are equal to β times enlarged circuit pattern of a semiconductor device to be finally produced. On the substrate R1, alignment marks 23A and 23B comprising two two-dimensional marks are previously formed for positioning operation when superimposing exposure is carried out. The patterns for the alignment marks 23A and 23B may be formed on a portion of the parent pattern, and the alignment marks 23A and 23B may be formed at the same time when the light shield patterns PA2 to PC2 are formed.

Page 15, line 9 to page 16, line 7:

When the light shield patterns PA2 to PC2 are formed on the substrate R1, a light shield film made of chromium, molybdenum silicide or the like is formed on a pattern region on a surface of the substrate R1, and positive photoresist is applied on the film. Then, images of the parent patterns PA1 to PC1 of the master reticle MR are transferred at reduced magnification of $1/\alpha$ using the optical projection exposure apparatus. At that time, in order to form the reduced images of the parent patterns PA1 to PC1 on the substrate R1 with high precision, the projection exposure is carried out with an appropriate amount of exposure light using the optical projection exposure apparatus having sufficient resolution. In this example, a positive resist having photosensitive portion which can be melted is used as the photoresist. The images of the parent patterns PA1 to PC1 are used as light shield portions. When a negative photoresist having photosensitive portion which remains is used, a transmission portion and a light shield portion are reversed as compared with the positive photoresist. Therefore, in order to form the images of the parent patterns PA1 to PC1 as the light shield portions, it is necessary to use a master reticle whose transmission portion and light shield portion are reversed in Fig.~~1(A)~~ 1A.

Page 16, line 8 to line 13:

The photoresist is developed and then, the etching and resist removing operations are carried out, and the light shield patterns PA2 to PC2 are formed on the substrate R1. After the light shield patterns PA2 to PC2 are formed on the substrate R1, the phase shifter is further formed, thereby producing the phase-shift reticle shown in Fig.~~1(C)~~ 1C.

Page 16, line 14 to page 17, line 12:

In Fig.~~1(C)~~ 1C, the phase-shift reticle WR1 comprises a substrate R1 on which the light shield patterns PA2 to PC2 are formed and phase shifters SA to SD formed on the substrate R1 and having light transmission phases deviated by π (rad). By forming the phase

shifters SA to SD, a width of a dark line on a boundary between a region (region where neither light shield pattern nor phase shifter is formed) where a light transmission phase is not affected on the phase-shift reticle WR1, and a region (region where the phase shifter is formed) where the light transmission phase is shifted by π (rad) is minimized by compensating effect caused by interference of light. Thus, it is possible to transfer a pattern while enhancing the resolution of the dark line on the boundary portion. Therefore, the phase shifters SA to SD are respectively formed along one of edges of the corresponding light shield pattern PA2 in the longitudinal direction and along one of edges of the linear portions of the T-shaped light shield patterns PB2 and PC2 in the longitudinal direction. Like the light shield pattern PA2 (dense pattern) comprising the light shield patterns PA21 to PA23, when a distance between the light shield patterns is narrow, it is only necessary to dispose one phase shifter with respect to the two light shield patterns PA21 and PA22 like the phase shifter SA.

Page 19, line 2 to page 20, line 4:

Thereupon, in the present example, a correction exposure reticle WR2 is formed. On the correction exposure reticle WR2, light shield patterns PA3 to PC3 which are patterns having thicker line widths of the light shield patterns PA2 to PC2 of the phase-shift reticle WR1 shown in Fig.~~1(D)~~ 1D are formed. The light shield patterns PA3 to PC3 are formed in the same manner as that of the phase-shift patterns PA2 to PC2 of the phase-shift reticle WR1. That is, the light shield patterns PA3 to PC3 are formed in such a manner that reduced images of the parent patterns PA1 to PC1 of the master reticle MR are transferred onto a substrate R2 (material of the substrate R2 is the same as that of the substrate R1) formed with a light shield film on which positive photoresist is applied using an optical projection exposure apparatus. However, in this case, patterns having line widths thicker than those of the light shield patterns PA2 to PC2 by carrying out the exposure under a condition of exposure amount smaller (about half for example) than that required for forming the light

shield patterns PA2 to PC2. Therefore, the light shield pattern PA3 is formed as a pattern in which the entire inside and periphery of the light shield pattern PA2 which is the dense pattern are formed as light shield portions. Further, like the phase-shift reticle WR1, the correction exposure reticle WR2 is also formed with alignment marks 24A and 24B comprising two two-dimensional marks with a predetermined positional relation with respect to the light shield patterns PA3 to PC3.

Page 21, line 8 to line 20:

A light shield band 50 surrounding the light shield patterns PA2 to PC2 of the phase-shift reticle WR1 in Fig.~~1(C)~~ 1C is a frame-like light shield pattern having a predetermined width like the light shield pattern PA21 and the like. One edge of the phase-shift SD in the longitudinal direction closer to the light shield band 50 is extended to the light shield band 50. With this design, the above-described boundary does not exists on the edge of the phase shifter SD, the unnecessary dark line pattern is not transferred. Thus, in the case of the other phase shifters SA to SC also, if the edges are close to the light shield band 50, ends thereof may be disposed in the light shield band 50 to reduce the boundaries.

Page 21, line 21 to line 23:

Next, exposure conditions when the phase-shift reticle WR1 and the correction exposure reticle WR2 of this example are produced will be explained with reference to ~~Fig.2~~ Figs.2A-2D.

Page 21, line 24 to page 22, line 6:

Fig.~~2(A)~~ 2A is an enlarged sectional view of the master reticle MR shown in Fig.~~1(A)~~ 1A taken along a lint A-A. In Fig.~~2(A)~~ 2A, parent patterns PA1 (light shield patterns P1 to P3) and PB1 comprising light shield pattern are formed on a reticle substrate R. In the following explanation, a short side direction of each of the light shield patterns P1 to P3 and the reduced images thereof is defined as an X-direction.

Page 22, line 7 to line 22:

Fig.~~2(B)~~ 2B shows intensity of light on the substrate R1 when the light shield patterns PA2 and PB2 are formed on the substrate R1 shown in Fig.~~1(B)~~ 1B. In Fig.~~2(B)~~ 2B, the horizontal axis indicates a position x in the X-direction, and the vertical axis indicates the intensity of light IM on the substrate R1 at the position x. An exposure amount Eth shown with a dotted line is an exposure amount required for melting the positive photoresist. A slice width of a light intensity distribution curve Imb with the exposure amount Eth corresponds to a line width of a pattern to be formed on the substrate R1. When the light shield patterns PA2 and PB2 are formed on the substrate R1, the exposure light amount is set to an appropriate exposure light amount, and images of the light shield patterns P1 to P3 and the parent pattern PB1 are formed using line widths X1 to X4, respectively (see Fig.~~1(B)~~ 1B).

Page 22, line 23 to page 23, line 24:

Fig.~~2(C)~~ 2C shows the light intensity on the substrate R2 when the light shield patterns PA3 and PB3 are formed on the substrate R2 shown in Fig.~~1(D)~~ 1D. Fig.~~2(C)~~ 2C shows the light intensity Im in the position x in the X-direction of the substrate R2. The slice width of a light intensity distribution curve Imc with the exposure amount Eth corresponds to a line width of a pattern formed on the substrate R2. As an exposure condition at that time, the exposure amount is set to about a half of an exposure amount (appropriate exposure amount) when the light shield patterns PA2 and PB2 of the phase-shift reticle WR1 are formed. If images of the parent patterns PA1 and PB1 of the master reticle MR are transferred and developed under such a condition, since the resolution of images of the light shield patterns P1 to P3 which are dense line and space patterns is low, one light shield pattern PA3 (see Fig.~~1(D)~~ 1D) having a wide width X5 is formed. If an image of the T-shaped parent pattern PB1 which is an isolated pattern is transferred, a light shield pattern PB3 of line width X6 having a thick linear portion is formed. The line width X6 of this light shield

pattern PB3 is thicker than the line width X4 of the light shield pattern PB2, and the width X5 of the light shield pattern PA3 in the X-direction is longer than a distance as measured from a left end of the image of the light shield pattern P1 formed on the substrate R1 to a right end of the image of the light shield pattern P3.

Page 24, line 24 to page 25, line 16:

Fig.~~2(D)~~ 2D shows the light intensity on the substrate R2 when the light shield patterns PA1 and PB1 are formed using a projection exposure apparatus having a projection optical system of low resolution. Fig.~~2(D)~~ 2D shows the light intensity Im in the position x in the X-direction of the substrate R2. The slice widths X7 and X8 of a light intensity distribution curve Imd are respectively equal to the slice widths X5 and X6 of the light intensity distribution curve Imc at the exposure amount Eth in Fig.~~2(C)~~ 2C. Using the projection exposure apparatus having the projection optical system of low resolution also, it is also possible to produce the correction exposure reticle WR2. When the parent pattern is transferred, it is also possible to bring the surface of the substrate R2 out from the best focus position of the projection optical system to throw the image out of focus. Further, these methods and a method for exposing with an exposure amount smaller than the appropriate exposure amount may be combined.

Page 26, line 8 to line 15:

In this example, the phase-shift reticle WR1 shown in Fig.~~1(C)~~ 1C and the correction exposure reticle WR2 shown in Fig.~~1(D)~~ 1D are produced by transferring the reduced images of patterns of the master reticle MR shown in Fig.~~1(A)~~ 1A onto the substrates respectively. One example of an optical projection exposure apparatus for producing reticles which can be used at that time will be explained with reference to Fig.3.

Page 28, line 24 to page 29, line 20:

The exposure light IL passing through the beam splitter 6 illuminates the master reticle MR to be transferred through the condenser lens system 5. A pattern surface (lower surface) of the master reticle MR is formed with the parent patterns PA1 to PC1 shown in Fig.~~1(A)~~ 1A and the alignment marks 22A and 22B. The exposure light IL which has passed through the master mask MR forms an image obtained by reducing the parent pattern with reduction magnification of $1/\alpha$ ($1/\alpha$ is 1/4, 1/5 or the like) on the substrate R1 (or R2) which is for producing the reticle through the projection optical system PL. A variable aperture stop 7 is disposed on or in the vicinity of an optical Fourier-transform plane (pupil plane) with respect to a pattern forming surface of the master mask MR in a projection optical system PL, and the numerical aperture NA of the projection optical system PL is defined by the aperture stop 7. Although the condenser lens system 5 is illustrated briefly in the drawing, the actual condenser lens system 5 is an optical system in which an image is once formed therein and which has a reticle blind (field stop) on its image-forming surface (conjugate surface with the pattern surface of the master reticle MR).

Page 30, line 22 to page 31, line 5:

Reticle alignment microscopes ("RA microscopes" hereinafter) 19A and 19B are disposed above the master mask MR. The positional relation between the alignment marks 22A and 22B (see ~~Fig.1~~ Figs.1A-1D) and corresponding predetermined reference marks (not shown) is measured by the RA microscopes 19A and 19B, and results of the measurement are supplied to the main control system 16. The main control system 16 aligns the master mask MR based on the measurement results.

Page 33, line 9 to page 34, line 1:

In the projection exposure apparatus shown Fig.3, although the fly-eye lens is used as the optical integrator (homogenizer) 3, a rod integrator may be be used instead thereof. The

projection optical system PL may any of refractive system, reflection system and catadioptric system. As the catadioptric projection optical system, it is possible to use an optical system in which a plurality of refractive optical elements and two reflection optical elements (at least one of them is a concave mirror) are disposed on a straightly extending optical axis without bending as disclosed in USP No.5788229, the disclosure of which is herein incorporated by reference. As the illumination light for exposure, a single wavelength laser in an infrared region or visible region lased from a DFB semiconductor laser or fiber laser may be amplified with a fiber amplifier doped with erbium (Er) (or both erbium and ytterbium (Yb)), and a harmonic whose wavelength is converted into ultraviolet rays using a non-linear optical crystal may be used.

Page 38, line 24 to page 39, line 22:

Subsequently, when an image of a pattern in a different region on the master mask MR1 is transferred to a different shot region of the substrate R1, the reticle blind is adjusted again so that the pattern in the different region is illuminated, the Z-tilt stage 8 is moved in a step manner to move a next shot region on the substrate R1 to the exposure region of the projection optical system PL, and the shot region is illuminated with the exposure light IL while stitch screens. In this example, however, in order to expose the reduced image 32-2P of the pattern of the master reticle MR2, the master reticle is exchanged on the reticle stage 13 and then, step move of the Z-tilt stage 8 (substrate R1) is carried out, and the pattern is exposed while stitching screens. The operation for exposing the reduced images of the corresponding master reticles in the N-number of shot regions on the substrate R1 is repeated in a step-and-repeat manner (step-and-stitch manner), and the N-number of $1/\alpha$ times reduced images 32-1P to 32-NP of the partial parent patterns are transferred onto the substrate R1. Thereafter, steps such as development of the photoresist, etching of the light shield film and removal of the resist are carried out, and the substrate R1 is formed with the light shield

patterns such as the light shield patterns PA2 to PC2 shown in Fig.~~1(B)~~ 1B.

Page 39, line 23 to page 40, line 9:

Next, a photoresist is applied on the substrate R1, and the substrate is again loaded onto the Z-tilt stage 8 of the projection exposure apparatus. Then, the N-number of 1/α times reduced images 34-1P to 34-NP of the partial parent patterns of the phase shifter master reticles MP1 to MPN shown in Fig.5 are exposed on the N-number of shot regions on the substrate R1 while stitching screens. Thereafter, development, etching of the substrate R1 itself and the resist removing operation are carried out, thereby completing the phase-shift reticle WR1 having the phase shifter shown in Fig.~~1(C)~~ 1C.

Page 41, line 11 to line 17:

Similarly, 1/α times reduced images 32-2P to 32-NP of the partial parent patterns of the master reticles MR2 to MRN are transferred onto the substrate R2 while stitching screens. Then, development of the photoresist, etching of the light shield film and the resist removing operation are carried out, thereby producing the correction exposure reticle WR2 as shown in Fig.~~1(D)~~ 1D.

Page 41, line 18 to page 42, line 13:

In the above embodiment, the parent pattern 31 is divided into the N-number of square partial patterns 32-1 to 32-N having the same size as shown in Fig.4. However, when the reduced images of these partial parent patterns are actually exposed while stitching screens, if no pattern is astride the boundary, the influence of joint error is reduced. Thereupon, as disclosed in Japanese Patent Application Laid-open No.9-190962, the disclosure of which is herein incorporated by reference, for example, when the parent pattern 31 (the same is applied to the phase-shift parent pattern 33) is divided, the boundary between the adjacent partial parent patterns may be formed with bumps and dips so that patterns (especially patterns having narrow line width) do not exist as minimum as possible. By transferring the reduced

images of such a plurality of divided partial parent patterns having different shapes while stitching screens, it is possible to largely reduce the number of joint portions (pattern astride two short regions) on the substrate. Therefore, it is possible to enhance the production precision of the phase-shift reticle WR1 and the correction exposure reticle WR2 as the working reticles.

Changes to Claims:

Claims 14-18 are added.

The following are marked-up versions of the amended claims:

1. (Amended) A producing method of a mask ~~for producing~~ which produces a phase-shift mask and a correction exposure mask used when a transmission image of a pattern of the phase-shift mask is corrected by superimposing exposure, ~~characterized in that~~ comprising:

forming a parent pattern ~~is formed~~ on a first substrate to form a master mask~~,~~ ;

transferring the parent pattern of the master mask ~~is transferred~~ onto a second substrate under a first condition, and forming a predetermined phase shift portion ~~is formed~~ on the second substrate, thereby forming the phase-shift mask~~,~~ ; and

transferring the parent pattern of the master mask ~~is transferred~~ onto a third substrate under a second condition which is different from the first condition, thereby forming the correction exposure mask.

2. (Amended) A producing method of a mask as recited in claim 1, ~~characterized in that~~ wherein the second condition is a condition wherein an amount of exposure is smaller than that in the first condition.

3. (Amended) A producing method of a mask as recited in claim 1, ~~characterized in that~~ wherein

under the first condition, the parent pattern of the master mask is transferred onto the second substrate through a first projection optical system having a predetermined first resolution, and

under the second condition, the parent pattern of the master mask is transferred onto the third substrate through a second projection optical system having a second resolution lower than ~~that of the projection optical system~~ the first resolution.

4. (Amended) A producing method of a mask as recited in claim 3, ~~characterized in that~~ wherein

the numerical aperture of the second projection optical system used under the second condition is set smaller than the numerical aperture of the first projection optical system used under the first condition.

5. (Amended) A producing method of a mask as recited in claim 1, ~~characterized in that~~ wherein under the second condition, the third substrate is defocused with respect to an image plane of the projection optical system.

6. (Amended) A producing method of a mask as recited in ~~any one of claims 1 to 5~~ claim 1, ~~characterized in that~~ wherein the parent pattern is divided into the plural number to form a plurality of master masks, and patterns of the plurality of the master masks are transferred while stitching screens, thereby forming patterns respectively corresponding to the parent pattern on the second and third substrates.

7. (Amended) A producing method of a mask ~~for producing~~ which produces a correction exposure mask used when a transmission image of a pattern of a predetermined phase-shift mask is corrected by superimposing exposure, ~~characterized in that~~ comprising:

forming a parent pattern ~~is formed~~ on a first substrate to produce a master mask~~,~~ ; and

transferring the parent pattern of the master mask ~~is transferred~~ onto a second substrate under a condition different from a condition under which a light shield pattern of the phase-shift mask is formed, thereby forming the correction exposure mask.

8. (Amended) A producing method of a mask as recited in claim 7, ~~characterized in that~~ wherein the condition includes at least one of an exposure amount, a resolution, and focus.

9. (Amended) A producing apparatus of a mask ~~for producing~~ which produces a plurality kinds of masks different from one another, ~~characterized by~~ comprising:

a mask stage which holds a master mask on which a parent pattern is formed;

a substrate stage which sequentially holds and positions a plurality of mask substrates for the masks~~,~~ ;

an illumination optical system which illuminates the master masks on the mask stage~~,~~ ;

a projection optical system which transfers an image of the parent pattern of the master mask onto the mask substrate on the substrate stage~~,~~ ; and

a control system which adjusts at least one of an exposure amount with respect to the mask substrate and a resolution of the projection optical system in accordance with kinds of the mask to be produced.

10. (Amended) A producing method of a predetermined device, ~~characterized by~~ comprising:

~~a first step of~~ drawing a parent pattern corresponding to a pattern of a predetermined layer of the device onto one or a plurality of first substrates to form a master mask~~,~~ ;

~~a second step of~~ transferring the parent pattern of the master mask onto a second substrate under a first condition and forming a predetermined phase-shift portion on the second substrate, thereby forming a phase-shift mask~~,~~ ;

~~a third step of~~ transferring the parent pattern of the master mask onto a third substrate under a second condition which is different from the first condition, thereby forming a correction exposure mask~~,~~ ; and

~~a fourth step of~~ exposing in a superimposing manner the pattern of the phase-shift mask and the pattern of the correction exposure mask on a fourth substrate.

11. (Amended) A photomask~~, characterized by being~~ produced using the mask producing method as recited in ~~any one of claims 1 to 5, 7 and 8~~ claim 1.

12. (Amended) A producing method of a device, ~~characterized by including a step of~~ comprising: transferring a device pattern onto a device substrate using the mask as recited in claim 11.

13. (Amended) A photomask~~, characterized by being~~ produced using the mask producing apparatus as recited in claim 9.